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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,958	02/28/2004	Richard E. Harper	YOR920030494US1 (710.034)	6692
58127 7590 03/17/2008 FERENCE & ASSOCIATES LLC 409 BROAD STREET PITTSBURGH, PA 15143				
EXAMINER MEHRMANESH, ELMIRA				
ART UNIT		PAPER NUMBER		
2113				
MAIL DATE		DELIVERY MODE		
03/17/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/788,958

Applicant(s)

HARPER ET AL.

Examiner

Elmira Mehrmanesh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This action is in response to a RCE filed on December 18, 2007 for the application of Harper et al., for an "Automatic crash recovery in computer operating systems" filed February 28, 2004.

Claims 1-43 are pending in the application.

Claims 1, 22, 23, 43 and 43 have been amended.

Claims 1-43 are rejected under 35 USC § 102.

Claim Rejections - 35 USC § 101

In view of the Applicant's amendments, the previous rejection of claims 23-42 under 35 U.S.C. 101 has been withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Cantrill (U.S. Patent No. 6,523,141).

As per claim 1, Cantrill discloses a method of providing automatic recovery from operating system faults, said method comprising the steps of:

- detecting an operating system fault (col. 4, lines 46-49)
- analyzing the operating system fault (Fig. 2)
- determining a cause of the an operating system fault (Fig. 3, elements 312, 316)
- determining a solution and applying a solution (Fig. 3, element 320).

As per claim 2, Cantrill discloses providing a resolution test and returning to production (Fig. 3).

As per claim 3, Cantrill discloses at least one of the recited steps does not require any work (Fig. 3).

As per claim 4, Cantrill discloses at least one of the recited steps does not require any work (Fig. 3).

As per claim 5, Cantrill discloses said detecting step comprises at least one of: an operating system call to a halting routine and an exception or error associated with at least one of: an operating system, middleware, firmware and Licensed Internal Code (Fig. 3, element 316).

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As per claim 6, Cantrill discloses said detecting step comprises an abnormal termination of a driver or application (col. 4, lines 38-49).

As per claim 7, Cantrill discloses said detecting step comprises a hypervisor observation of unusual behavior from a guest operating system (col. 4, lines 38-49).

As per claim 8, Cantrill discloses said detecting step comprises an interception of a call to an operating system halting routine or exception handler (Fig. 3, element 316).

As per claim 9, Cantrill discloses said detecting step comprises automatically inspecting at least one aspect relating to the operating system (col. 4, lines 38-49).

As per claim 10, Cantrill discloses said detecting step comprises automatically inspecting at least one of: main memory; a kernel stack; process stacks; a state of all running threads; an amount of pageable memory used; an amount of pageable memory free for use; an amount of total pageable memory in the system; an amount of total pageable memory available to the operating system kernel; an amount of non-pageable memory used; an amount of Non-pageable memory free for use; an amount of total non-pageable memory in the system; an amount of total non-pageable memory available to the operating

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system kernel; a number of system page table entries used; a number of system page table entries available for use; an amount of virtual memory allocated to a system page table; a size of a system cache; a size of a page cache; a size of a file cache; an amount of space available in a system cache; an amount of space available in a page cache; an amount of space available in a file cache; a size of a system working set; a number of system buffers available; page sizes; a number of network connections established; utilization of one or more central processing units; a number of threads allocated; a percentage of time spent in a kernel; a number of system interrupts per unit time; a number of page faults per unit time; a number of page faults in a system cache per unit time; a number of paged pool allocations per unit time; a number of non-paged pool allocations per unit time; a length of look-aside lists; a number of open file descriptors; an amount of free space on a disk or disks; a percentage of time spent at interrupt level; a number of device drivers that are loaded; status of loaded device drivers; a number of outstanding I/O requests for device drivers; a state of devices attached to the system (Fig. 3 and 4A-B).

As per claim 11, Cantrill discloses of automatically inspecting comprises determining a degree of memory corruption (Fig. 2).

As per claim 12, Cantrill discloses manual fault resolution is prompted if memory corruption is detected (Fig. 3).

As per claim 13, Cantrill discloses said step of automatically inspecting is performed via software (Fig. 3).

As per claim 14, Cantrill discloses said step of determining a cause comprises identifying at least one faulty component (Fig. 3, elements 316).

As per claim 15, Cantrill discloses said analyzing step provides input into said step of determining a cause (Fig. 3, elements 312, 316).

As per claim 16, Cantrill discloses external information provides input into said step of determining a cause (Fig. 2 and 3).

As per claim 17, Cantrill discloses said step of applying a solution comprises effecting one or more changes or updates in at least one of: device driver software, operating system code, and firmware (Fig. 3, element 320).

As per claim 18, Cantrill discloses said step of effecting one or more changes or updates comprises deactivating faulty software (Fig. 4A).

As per claim 19, Cantrill discloses said step of providing a resolution test comprises monitoring a new component during a trial period (Fig. 4A-B).

As per claim 20, Cantrill discloses the trial period is over a finite period of time (col. 9, lines 27-41).

As per claim 21, Cantrill discloses the status of the new component is reported subsequent to the trial period (col. 9, lines 27-41).

As per claim 22, Cantrill discloses at least one of the following steps is repeated upon determination of a negative status of the new component:

- detecting an operating system fault (col. 4, lines 46-49)

- analyzing the operating system fault (Fig. 2)

- determining a cause of the an operating system fault (Fig. 3, elements 312, 316)

- determining a solution and applying a solution (Fig. 3, element 320).

- and providing a resolution test (col. 9, lines 27-41).

As per claim 23, Cantrill discloses an apparatus for providing automatic recovery from operating system faults, said apparatus comprising:

- an arrangement for detecting an operating system fault (col. 4, lines 46-49)

- an arrangement for analyzing the operating system fault (Fig. 2)

- an arrangement for determining a cause of the an operating system fault (Fig. 3, elements 312, 316)

an arrangement for determining a solution and applying a solution (Fig. 3, element 320)

wherein the apparatus utilizes a processor to provide the automatic recovery (Fig. 5, element 1032).

As per claim 24, Cantrill discloses an arrangement for providing a resolution test and an arrangement for returning to production (Fig. 3).

As per claim 25, Cantrill discloses said detecting arrangement is adapted to provide at least one of: an operating system call to a halting routine and an exception or error associated with at least one of: an operating system, middleware, firmware and Licensed Internal Code (Fig. 3, elements 312, 316).

As per claim 26, Cantrill discloses said detecting arrangement is adapted to provide an abnormal termination of a driver or application (col. 4, lines 38-49).

As per claim 27, Cantrill discloses said detecting arrangement is adapted to provide a hypervisor observation of unusual behavior from a guest operating system (col. 4, lines 38-49).

As per claim 28, Cantrill discloses said detecting arrangement is adapted to provide an interception of a call to an operating system halting routine or

exception handler (Fig. 3, elements 312, 316).

As per claim 29, Cantrill discloses said detecting arrangement is adapted to automatically inspect at least one aspect relating to the operating system (Fig. 2).

As per claim 30, Cantrill discloses said detecting arrangement is adapted to automatically inspect at least one of: main memory; a kernel stack; process stacks; a state of all running threads; an amount of pageable memory used; an amount of pageable memory free for use; an amount of total pageable memory in the system; an amount of total pageable memory available to the operating system kernel; an amount of non-pageable memory used; an amount of Non-pageable memory free for use; an amount of total non-pageable memory in the system; an amount of total non-pageable memory available to the operating system kernel; a number of system page table entries used; a number of system page table entries available for use; an amount of virtual memory allocated to a system page table; a size of a system cache; a size of a page cache; a size of a file cache; an amount of space available in a system cache; an amount of space available in a page cache; an amount of space available in a file cache; a size of a system working set; a number of system buffers available; page sizes; a number of network connections established; utilization of one or more central processing units; a number of threads allocated; a percentage of time spent in a kernel; a number of system interrupts per unit time; a number of page faults per

unit time; a number of page faults in a system cache per unit time; a number of paged pool allocations per unit time; a number of non-paged pool allocations per unit time; a length of look-aside lists; a number of open file descriptors; an amount of free space on a disk or disks; a percentage of time spent at interrupt level; a number of device drivers that are loaded; status of loaded device drivers; a number of outstanding I/O requests for device drivers; a state of devices attached to the system (Fig. 2 and 3).

As per claim 31, Cantrill discloses detecting arrangement is adapted to determine a degree of memory corruption (Fig. 2 and 3).

As per claim 32, Cantrill discloses manual fault resolution is prompted if memory corruption is detected (Fig. 3).

As per claim 33, Cantrill discloses said detecting arrangement is adapted to perform automatic inspecting via software (Fig. 2).

As per claim 34, Cantrill discloses said arrangement for determining a cause is adapted to identify at least one faulty component (Fig. 3, element 316).

As per claim 35, Cantrill discloses said analyzing arrangement provides input into said arrangement for determining a cause (Fig. 3, element 304).

As per claim 36, Cantrill discloses external information provides input into said arrangement for determining a cause (Fig. 3, element 316).

As per claim 37, Cantrill discloses said arrangement for applying a solution is adapted to effect one or more changes or updates in at least one of: device driver software, operating system code, and firmware (Fig. 3).

As per claim 38, Cantrill discloses said arrangement for effecting one or more changes or updates is adapted to deactivate faulty software (Fig. 3).

As per claim 39, Cantrill discloses said arrangement for providing a resolution test comprises monitoring a new component during a trial period (col. 9, lines 27-41).

As per claim 40, Cantrill discloses the trial period is over a finite period of time (col. 9, lines 27-41).

As per claim 41, Cantrill discloses said arrangement for providing a resolution test is adapted to report the status of the new component subsequent to the trial period (col. 9, lines 27-41).

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As per claim 42, Cantrill discloses at least one of the following is repeated upon determination of a negative status of the new component (col. 9, lines 27-41):

- detecting an operating system fault (col. 4, lines 46-49)
- analyzing the operating system fault (Fig. 2)
- determining a cause of the an operating system fault (Fig. 3, elements 312, 316)
- determining a solution and applying a solution (Fig. 3, element 320)
- and providing a resolution test (col. 9, lines 27-41).

As per claim 43, Cantrill discloses a program storage device readable by machine (Fig. 5), tangibly embodying a program of instructions executable by the machine to perform method steps for providing automatic recovery from operating system faults (col. 4, lines 46-49), said method comprising the steps of:

- detecting an operating system fault (col. 4, lines 46-49)
- analyzing the operating system fault (Fig. 2)
- determining a cause of the an operating system fault (Fig. 3, elements 312, 316)
- determining a solution and applying a solution (Fig. 3, element 320).

Response to Arguments

Applicant's arguments filed November 19, 2007 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elmira Mehrmanesh whose telephone number is (571) 272-5531. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Robert W. Beausoliel, Jr./

Supervisory Patent Examiner, Art Unit 2113